Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

MATERIALS AND MANUFACTURING DIRECTORATE MANAGES TECHNICAL HANDBOOK UNDER SUCCESSFUL CRADA

The *Aerospace Structural Metals Handbook* (ASMH), produced under a Cooperative Research and Development Agreement (CRADA), provides information and data benefits to the Air Force, Department of Defense, and the aerospace community at no cost to the Air Force. The ASMH serves as a transition tool for emerging materials and facilitates the transfer of technology through timely selection of materials supporting research and development, maintenance and operations, and systems planning. The Air Force uses the annual royalties for laboratory activities complementary to its mission.

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Accomplishment

The Materials and Manufacturing Directorate successfully managed the production of the ASMH and two other technical publications frequently used throughout the aerospace world for more than a decade. The directorate added a new volume to the ASMH, combined with periodic updates to all three major publications, under a CRADA initiated more than 10 years ago. Managed by the directorate's Systems Support Division, the agreement helps ensure proper selection and understanding of materials used across the entire aerospace spectrum.

Background

The ASMH is a unique source for referenced alloy data of special interest to all users of high-performance metals. The handbook permits researchers to select an alloy for a particular application with a working knowledge of typical physical and mechanical properties and, at the same time, allows consideration of the limiting load-carrying factors associated with the service condition or metallurgical history of the alloy. The handbook covers such materials as wrought steel, cast iron, wrought stainless steel, cast steel, cast stainless steel, structural steels, wrought and cast aluminum, copper, brass, bronze, magnesium, and titanium.

Information and data contained in the ASMH assist materials' properties users. Individual chapters on each alloy describe such factors as commercial designations, specifications, composition, heat treatment, physical properties, and environmental effects.

The handbook also provides critical information and data on each alloy's mechanical properties and performance at various temperatures, in formats geared for engineering applications. The directorate also makes revisions quarterly with assistance from the National Aeronautics and Space Administration.

In 1991, the Center for Information and Numerical Data Analysis and Synthesis (CINDAS) at Purdue University entered into a CRADA with the directorate for the continued technical maintenance, publication, and distribution of the handbook. Since then, the directorate has managed the ASMH program along with two other important publications—the *Structural Alloys Handbook* and the *Composites Failure Analysis Handbook*—all at no cost to the Air Force for principal expenses such as distribution, maintenance, and marketing. The ASMH is available for purchase from CINDAS in either hard copy or compact disk format.

Materials and Manufacturing
Awards and Recognition

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-ML-25)